IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of	:	**Confirmation No. 1037**
Kouki FUKUI	:	Docket No. 2001_0681A
Serial No.09/870,480	:	Group Art Unit 1772
Filed June 1, 2001	:	Examiner W. Aughenbaugh
NONCOMBUSTIBLE INSULATING DUCT		**Mail Stop: Appeal Brief**

APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an appeal from the final rejection of claims 15-42, 44, 45 and 47.

1. REAL PARTY IN INTEREST:

The real party in interest is the assignee, Totaku Industries, Inc. of Osaka, Japan.

2. RELATED APPEALS AND INTERFERENCES:

NONE

3. STATUS OF CLAIMS:

Claims 1-14, 43 and 46 have been cancelled; and

Claims 15-42, 44, 45 and 47 stand rejected.

Therefore, the claims on appeal are claims 15-42, 44, 45 and 47.

4. STATUS OF AMENDMENTS:

An amendment after the final rejection mailed December 29, 2003 was filed on December 29, 2003 to cancel claims 43 and 46. The after-final amendment was entered, as indicated in the Advisory Action mailed April 21, 2004.

5. SUMMARY OF THE INVENTION:

Please note that references made herein to the specification are references to the substitute specification filed December 12, 2002.

The present invention is directed generally to a heat insulating duct to be provided in a building and used for air-conditioning, air discharging and ventilating purposes. It is desirable for the insulating duct to be flexible, and it is necessary, due to various building codes, for the insulating duct to be noncombustible. Furthermore, it is desirable that the structure of the duct be such as to lend itself to high manufacturing productivity of the duct. *See page 1, lines 8-10 and page 2, lines 4-6.*

The noncombustible insulating duct of the present invention, as best illustrated in Figs. 1 and 4, is formed of a spirally-wound elongated strip 1 that can be manufactured continuously, and can be readily manufactured to an arbitrary length. *See page 2, lines 7-12.*

The independent claims on appeal, claims 15, 22 and 31, each recite the same noncombustible insulating duct, with the exception of the structure by which the adjacent turns of the spirally-shaped elongated strip 1 are secured together. In particular, independent claim 15 specifies that the adjacent turns of the plurality of turns of the spiral shape are secured together by a bonding agent 7 so as to form a tubular duct *(see Figs. 1 and 4)*; claim 22 specifies that the adjacent turns of the plurality of turns of the spiral shape are secured together by a noncombustible joint member 5 so as to form a tubular duct *(see Figs. 1 and 2)*; and claim 31 specifies that the adjacent turns of the plurality of turns of the spiral shape are secured together by a bonding agent 7 and a noncombustible joint member 5 so as to form a tubular duct *(see Figs. 1 and 2)*.

Thus, with the above background, the present invention of claim 15 sets forth a noncombustible insulating duct comprising: an elongated strip 1 formed of an insulating material 2 and a noncombustible sheet 3, wherein the noncombustible sheet 3 is disposed continuously about a circumference of the insulating material 2 so as to completely encase the insulating material 2 when viewed in longitudinal cross section *(see Figs. 1-4 and page 3, lines 8-15 of the specification)*; wherein the elongated strip 1 is arranged in a spiral shape having a plurality of turns *(see Figs. 1 and 4 and page 2, lines 7-10 and page 3, lines 20-23 of the specification)*; wherein adjacent turns of the plurality of turns of the spiral shape are secured together by a bonding agent 7 so as to form a tubular duct *(see Figs. 1, 2 and 4, and page 4, lines 6-9 and page 4, line 25 - page 5, line 3 of the specification)*; and wherein the tubular duct is noncombustible *(see page 2, line 7 of the specification)*.

Dependent claim 16 requires the bonding agent 7 to comprise a noncombustible agent *(see page 4, lines 21 and 22 of the specification)*. Dependent claims 17 and 18 require the insulating material 2 to comprise a noncombustible insulating fiber *(see page 4, lines 13-20 and page 2, lines 16 and 17 of the specification)*. Dependent claims 19 and 20 require the noncombustible insulating fiber 2 to be glass wool and rock wool, respectively *(see page 2, lines 16 and 17 and page 4, line 13 regarding the "glass wool" and see page 4, line 13 regarding the "rock wool")*. Dependent claim 21 specifies that the elongated strip 1 has a substantially rectangular cross section *(see Figs. 1-4 and page 3, lines 12 and 13 of the specification)*.

As mentioned above, independent claim 22 recites the same noncombustible insulating duct as claim 15, with the exception of the manner in which the adjacent turns of the spiral shape are secured together. In particular, the insulating duct of claim 22 is required to have the adjacent turns of the plurality of turns of the spiral shape secured together by a noncombustible joint member so as to form a tubular duct *(see Figs. 1 and 2 and page 2, lines 17-21 and page 3, lines 16-23 of the specification)*, but claim 22 is otherwise identical to claim 15.

Dependent claims 23-26 and 29 correspond to the dependent claims 17, 19, 20, 21 and 21, respectively. Dependent claims 27, 28 and 30 recite specific structure of the connecting structure

for the joint member 5 that connects the adjacent turns of the spiral shape together. In particular, claim 27 requires the elongated strip 1 to have first and second opposite sides facing in opposing axial directions of the tubular duct, respectively, and inner and outer sides facing toward an interior of the tubular duct and an exterior of the tubular duct, respectively; that the elongated strip 1 has flanges 4 projecting from the first and second sides thereof, respectively; and that the noncombustible joint member 5 is secured to the flanges 4 of adjacent turns of the elongated strip 1 to connect the flanges 4 together, thereby connecting the turns together *(see Figs. 1 and 2 and page 3, line 16 - page 4, line 4)*. Claim 28 further specifies that the flanges 4 include axially-extending portions extending in axial directions of the tubular duct; and that the noncombustible joint member 5 has opposing side edges that are folded-over the axially extending portions, respectively, of the flanges of the adjacent turns of the elongated strip 1 *(again see Figs. 1 and 2 and page 3, line 16 - page 4, line 4 of the specification)*. Claim 30 specifies that the flanges 4 project into the interior of the tubular duct, and that the noncombustible joint member 5 is disposed in the interior of the tubular duct *(see Fig. 1 and page 3, line 16 - page 4, line 4 of the specification)*.

Again, as discussed above, independent claim 31 recites a noncombustible insulating duct identical to that recited in claims 15 and 22, with the exception of the manner in which the adjacent turns of the spiral shape are secured together. In particular, claim 31 specifies that the adjacent turns of the plurality of turns of the spiral shape are secured together by both a bonding agent 7 and a noncombustible joint member 5 so as to form a tubular duct *(see Figs. 1 and 2 and page 3, line 16 - page 4, line 12 of the specification)*.

Claims 32-40 depend from claim 31 and recite features as recited in the above-discussed claims 17-21, 27, 28, 21 and 16, respectively.

Claims 41 and 42 depend from claims 31 and 22, respectively, and require the elongated strip 1 to have flanges 4 projecting from first and second sides thereof into an interior of the tubular duct, the noncombustible joint member 5 being engaged with the flanges 4, and the flanges 4 and the noncombustible joint members being disposed in the interior of the tubular duct *(see Fig. 1 and page 3, line 16 - page 4, line 4 of the specification)*.

Dependent claims 44, 45 and 47 depend from claims 31, 22 and 15, respectively, and are directed to material forming the noncombustible sheet 3. In particular, these claims each specify that the noncombustible sheet 3 is formed of a material selected from the group consisting of an aluminum glass cloth, aluminum foil, a nonflamably treated resin film, a glass cloth the pores of which have been filled and coated with silicon, a fire proof processed nonwoven cloth, a nonflamably treated mixed woven cloth, and a mica sheet *(see page 4, lines 13-20 of the specification)*.

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL:

A. Claims 15-27, 31-36 and 40 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Parrott et al. (GB 2 241 466) in view of Berdan, II (U.S. 6,042,911) and Clarke (U.S. 3,846,202);

B. Claims 28-30, 37-39, 41 and 42 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Parrott et al. in view of Berdan, II, Clarke and Hinden et al. (U.S. 4,861,631); and

C. Claims 44, 45 and 47 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Parrott et al. in view of Berdan, II, Clarke and Schroeder (U.S. 4,400,863).

7. ARGUMENT:

Ground of Rejection A - Rejection under 35 U.S.C. 103(a) over Parrott (GB 2 241 466) in view of Berdan (U.S. 6,042,911) and Clarke (U.S. 3,846,202):

CLAIMS 15-27, 31-36 and 40

This rejection presented by the Examiner is a classic case of impermissible use of hindsight reconstruction of a claimed invention by first ascertaining the features disclosed in claims in the application and then searching through the prior art and piecing together the prior art disclosures to meet the claimed invention, using appellant's claims and disclosure as a blueprint for such reconstruction of the claimed invention.

The present invention is basically a tubular duct formed of a spirally-wound elongated strip, where the strip is formed of an insulating material having a noncombustible sheet disposed completely thereabout so as to completely encase the insulating material when viewed in longitudinal cross-section, as seen in Figs. 1, 2 and 4.

The Examiner has pieced together three unrelated references, including: (1) the primary reference (Parrott) disclosing fireproof ducting that has the standard rectangular cross-sectional shape formed by piecing together four separate panels (i.e. top, bottom, right side and left side panels); (2) the secondary reference (Berdan) disclosing an elongated insulation batt to be inserted between joists, studs, or the like in a building; and (3) the tertiary reference (Clarke) disclosing the manufacture of a wire-reinforced flexible tubing formed of a spirally-wound thin flexible tape material 23 having a reinforcing wire 16 secured about an exterior thereof by a wear strip material 37 of vinyl or similar material.

Thus, the Examiner might have found the individual recited features of the claims in the three references, but a person of ordinary skill in the art would not, without benefit of the blueprint provided by appellant's disclosure and claims, have been motivated to combine these diverse references in the manner suggested by the Examiner. The Examiner has clearly impermissibly used appellant's disclosure and claims as a blueprint to search through the prior art, locate the various features and combine them so as to meet the claimed invention.

"When resolving an obviousness issue, the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. Care must be taken to avoid hindsight reconstruction by using the patent in suit as a guide through the maze of prior art references, combining the right references in the right way so as to achieve the result of the claims in suit." Grain Processing Corp. v. American Maize-Products Co., 840 F.2d 902, 907-908, 5 USPQ2d 1788, 1792 (Fed. Cir. 1988).

More specifically, the Examiner has cited the Parrott reference for disclosing a noncombustible insulating duct comprising panels formed of an insulating sheet material 7 adhesively bonded to noncombustible steel sheets 9.

The Examiner recognized that Parrott fails to disclose that the noncombustible steel sheets 9 are disposed continuously about a circumference of the insulating sheet material 7 so as to completely encase the sheet material 7, and also that Parrott fails to disclose that the panels 7, 9 do not constitute an elongated strip arranged in a spiral shape having a plurality of turns wherein adjacent turns are secured together to form a tubular duct.

Thus, Parrott discloses an insulating duct, but the duct does not comprise an elongated strip arranged in a spiral shape as required by each of the independent claims 15, 22 and 31 on appeal. Parrott instead discloses a rectangular cross-sectional duct having separate panels forming the top, bottom, and right and left sides of the duct that are connected together by screws 13. It is true that each individual panel is formed of an insulating material 7 clad with a noncombustible sheet 9 but, as recognized by the Examiner, the noncombustible sheet 9 is not disposed continuously about a circumference of the insulating material 7 so as to completely encase the insulating material 7 when viewed in longitudinal cross-section as required by claims 15, 22 and 31.

Since Parrott fails to disclose the noncombustible sheet disposed continuously about a circumference of the insulating material 7 so as to completely encase the insulating material 7 when viewed in longitudinal cross section, as admitted by the Examiner, the Examiner cited the Berdan reference for disclosing

> "a mineral fiber wool insulating material that is mechanically shaped into a batt having a rectangular cross sectional shape and an exterior facing (external layer, item 12, Fig. 1) that is secured to the batt (item 10, Fig. 1) and that overlies the entire batt perimeter to facilitate the ease of installing and handling of the insulation assembly." *(See page 4, line 20 - page 5, line 3 of the July 18, 2003 Office Action).*

From this disclosure in the Berdan reference, the Examiner concluded

> that a person of ordinary skill in the art "would have recognized to have bent the noncombustible sheet of Parrott et al. at perpendicular angles as taught by Parrott et al. such that the noncombustible sheet of Parrott is disposed continuously about a circumference of the

> insulating material of Parrott et al. so as to completely encase the insulating material when viewed in longitudinal cross section in order to facilitate the ease of installing and handling of the insulation assembly as taught by Berdan, II." *(See page 5, lines 4-9 of the July 18, 2003 Office Action).*

However, any teaching of Berdan in providing a fully encasing outer material (12) about an insulating material (10) would not have provided a motivation to modify the Parrott reference in the manner suggested by the Examiner.

More specifically, the exterior layer 12 of Berdan "loosely encapsulates the batt 10" *(column 4, line 1 of Berdan)* and the insulation assembly 1 formed by the batt 10 covered by the exterior layer 12 is, according to the object of the Berdan invention, to be able to be reshaped by the user to fit in a variety of spaces according to the needs of the user *(see column 3, lines 53-55 of Berdan)*. Such loosely encapsulated insulating material must, of course, be encased by the exterior layer 12 in order to facilitate the handling of the loosely encapsulated insulating batt material 10. However, this objective of Berdan in facilitating the handling of the loosely encapsulated batt material is not applicable to the Parrott structure, wherein the insulating material 7 is in the form of panels that, as clearly illustrated in, for example Fig. 3, itself has structural integrity and would not need to be encapsulated by an exterior layer to facilitate handling in the same manner that the Berdan loosely encapsulated material 10 would need to be encased by the exterior layer 12. Also, Berdan specifically, and as an important objective of the Berdan invention, teaches that the exterior layer 12 encapsulates the batt material 10 so that the insulation assembly 1 is reshapeable so as to conform to various spaces, such as in between two joists 3. The Parrott arrangement, on the other hand, utilizes sheet steel 9 as the exterior cladding of the insulating material panels 7 and, as such, it is clearly not a conformable assembly. Accordingly, for these reasons, it is submitted that a person having of ordinary skilled in the art would not have been motivated by the Berdan disclosure to modify the Parrott arrangement to have the noncombustible steel sheets 9 disposed continuously about the insulating panels 7 so as to completely encase the panels 7.

Even if, assuming for the sake of argument, the Parrott arrangement would be modified in view of Berdan as suggested by the Examiner, this combination still admittedly fails to meet the present claim limitations requiring the elongated strip to be arranged in a spiral shape having a plurality of turn, and for the adjacent turns of the plurality of turns of the spiral shape to be secured together so as to form a tubular duct. In view of this failure of even the Examiner's suggested combination of Parrott and Berdan, the Examiner cited the Clarke patent for disclosing "a tubular ventilation duct (col. 1, lines 30-33) formed of spirally wound tape (the equivalent of an elongated strip 'arranged in a spiral shape having a plurality of turns' as claimed) (col. 1, lines 23-29 and Figures 2 and 3)." *(See lines 12-14 of page 5 of the July 18, 2003 Office Action).*

From this disclosure of Clarke, the Examiner concluded

> that a person of ordinary skill in the art "would have recognized to have formed the sheet material taught by Parrott et al. and Berdan, II into an elongated strip of sufficient length so as to spirally wind the elongated strip into a tubular duct having a plurality of turns wherein adjacent turns of the plurality are secured together by a bonding agent as Clarke teaches that it is well known to form a tubular ventilation duct formed of a spirally wound elongated strip of ventilation sheet material." *(See page 5, lines 15-20 on page 5 of the July 18, 2003 Office Action).*

However, by this suggested combination, the Examiner is suggesting to entirely destroy the structure of the Parrott reference's ducting, which destruction would eliminate the type of structural integrity provided with rectangular cross-sectional shaped ducts using individual panels, and in this regard, reference is made to Figs. 1 and 3 of the Parrott reference. From Fig. 3 of Parrott, for example (also see the fourth paragraph on page 7 of Parrott), it is evident that Parrott desires a structure having sufficient structural integrity to be mountable using hanger rods 25 to be screwed into masonary 27 and secured to the top panel 7 of the ducting by locknuts 29. A spiral shape such as that disclosed in Clarke would not provide such structural shape or for the hanging of the duct as illustrated in Fig. 3.

Furthermore, although Clarke teaches a method for spirally winding a thin flexible tape material 23 so as to have, secured to its exterior by a vinyl or similar strip material 37, a coil reinforcing wire 16, Clarke provides no suggestion of how one would similarly produce a flexible tubing formed of a spirally wound elongated strip formed of an insulating material completely encased by a noncombustible sheet, such as that allegedly taught by the Examiner's suggested combination of Parrott and Berdan. In fact, Clarke discloses only a flexible tubing formed mainly of a thin flexible tape material 23, wherein a reinforcing wire 16 is secured to an exterior of the thin flexible material 23 by an elongated vinyl or similar strip material 37 (see Fig. 3); Clarke does not disclose or suggest such a spirally wound arrangement for an elongated strip formed of an insulating material completely encased by a noncombustible sheet. It is respectfully submitted that a person having ordinary skill in the art, even if motivated to modify Parrott to have the insulating panels 7 completely encased by the steel sheets 9 as suggested by the Examiner, would not have been motivated to further modify such modified version of the Parrott ducting so that the Parrott ducting is no longer rectangular and formed of separate panels, but is rather in a spirally wound shape formed of an elongated strip constituted by an insulating material completely encased by a noncombustible sheet.

In addition to the above reasons, it is respectfully submitted that a person having ordinary skill in the art would not have been motived to modify the Parrott reference in view of the Berdan patent because a person of ordinary skill in the art would not reasonably have been motived to go to the field of the Berdan reference (i.e. insulation for buildings) in order to solve any perceived problem of the Parrott reference since the Parrott reference is in an unrelated field (i.e. ductwork for buildings). "The combination of elements from non-analogous sources, in the manner that reconstructs the applicant's invention only with the benefit of hindsight, is insufficient to present a *prima facia* case of obviousness." In re Oetiker, 977 F.2d 1443, 1447, 24 USPQ2d 1443, 1446 (Fed. Cir. 1992). In order to determine whether particular references are analogous or non-analogous, the Federal Circuit adopted a two-step test in In re Deminski, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986).

According to this two-step test: (1) first, it must be determined whether the reference is within the field of the inventor's endeavor; and (2) second, if the reference is outside the field of the inventor's endeavor, it must be determined whether the reference is reasonably pertinent to the particular problem with which the inventor was involved.

As discussed above, it is submitted that the Parrott and Berdan references clearly do not meet the first step of the above-mentioned two-step test, since the Parrott reference is in the field of ducting for buildings, whereas the Berdan reference is in the field of insulation for buildings. It is further submitted that the Parrott and Berdan references do not meet the second step of the above-mentioned test. In this regard,

> "a reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem. Thus, the purposes of both the invention and the prior art are important in determining whether the references are reasonably pertinent to the problem the invention attempts to solve. If a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem, and that fact support use of that reference in an obviousness rejection. An inventor may well have been motivated to consider the reference when making his invention. If it is directed to a different purpose, the inventor would accordingly have had less motivation or occasion to consider it." In re Clay, 966 F.2d 656,659, 23 USPQ2d 1058, 1061 (Fed. Cir. 1992).

Thus, the problem to be solved by the present invention was to provide a noncombustible insulating duct with excellent noncombustibility, insulating characteristics and flexibility and which can be manufactured with high productivity. *(See page 2, lines 4-6 of the present specification)*. The problems addressed by the Parrott patent were to provide an improved material and assembly system for fire resisting ducting that will be of low cost and easy to use. *(Page 1, last three lines, of Parrott)*. In contrast to these problems in the present invention and in the Parrott reference, the problem solved by the Berdan invention was to provide an insulating batt assembly that can conform

to variations in spaces in which they are to be installed *(see column 1, lines 36-45 and lines 37-15, for example, as well as column 3, lines 32-42, of the Berdan patent).*

For these reasons, it is respectfully submitted that the Berdan reference is not analogous art and, as such, a person of ordinary skilled in the art would not have been motivated to modify the Parrott arrangement in view of Berdan as suggested by the Examiner.

* * * * * * * * * *

The above arguments apply to features of the present invention commonly recited in each of the independent claims 15, 22 and 31 and, as such, the above arguments apply to all of the claims on appeal. Therefore, for all of the above reasons, it is respectfully submitted that claims 15-42, 44, 45 and 47 are patentable over the references of record.

* * * * * * * * * *

CLAIMS 5-21, 31-36 and 40

Next, it is noted that each of the independent claims 15 and 31 specifies that the adjacent turns of the plurality of turns of the spiral shape are secured together by a bonding agent 7 so as to form a tubular duct. The Examiner states that "Clarke discloses that a bonding agent adhesively secures side portions of adjacent turns together (col. 1, lines 54-58)." *(Page 5, lines 14 and 15 of the July 18, 2003 Office Action).* Although it is correct that Clarke teaches bonding overlapped edges of the spiral-wound thin flexible tape material 23 together, as discussed above, it is submitted that a person of ordinary skill in the art would not have been motivated to make the combination suggested by the Examiner by modifying Parrott in view of Berdan and then further modifying a combination of Parrott and Berdan in view of Clarke to result in the claimed invention.

CLAIMS 22-27, 31-36 and 40

Next, it is noted that each of claims 22 and 31 specifies that adjacent turns of the plurality of turns of the spiral shape are secured together by a noncombustible joint member 5 so as to form a tubular duct. Regarding this recitation in claims 22 and 31, the Examiner stated that

> "Parrott et al. also teach that in addition to being secured together by a bonding agent, or as an alternative to being secured together by a bonding agent (paragraph bridging pages 4 and 5), panels (item 5) of the sheet material are connected via jointing strip (item 17, the noncombustible joint member as claimed by applicant) which comprises a mineral wool core (paragraph on pages 8 -9 and Figure 5); the mineral wool core of jointing strip (item 17) is adhesively bonded to the steel plating (item 9 of Figure 5, the flange as claimed by Applicant in claims 27 and 36) as mineral wool sheet (item 7) is adhesively bonded to inner and outer galvanized steel sheets (item 9 of Figures 1-4) as taught in the first four lines of the last paragraph of page 6." *(page 6, lines 11-19 of the July 18, 2003 Office Action).*

In other words, apparently, the Examiner alleges that the jointing strip 17 connecting duct panels 5 together in Fig. 5 of the Parrott reference meets the limitation of claims 22 and 31 (as well as the limitations of claims 27 and 36). However, the limitation in question in claims 22 and 31 is not simply a limitation requiring any two members to be connected together by a joint member, but rather requires adjacent turns of the plurality of turns of the spiral shape to be secured together by a noncombustible joint member so as to form a tubular duct. Clearly the jointing strip 17 of Parrott does not do this. Rather than joining, or in any way teaching the joining of, adjacent turns of a spiral shape, the Parrott jointing strip 17 simply joins two panels together by having the jointing strip 17 inserted into projecting portions *(see Fig. 5 of Parrott)* of the steel plating 9 between which mineral wool core is absent in the panels 5. In addition, it is noted that the jointing strip 17 of Parrott is formed of the insulating material, and not of the noncombustible sheet metal 9. For these reasons, it is submitted that the jointing strip 17 of Parrott does not meet the claim limitations of claims 22

and 31 which require the noncombustible joint member that secures together adjacent turns of the plurality of turns of the spiral shape so as to form a tubular duct.

Ground of Rejection B - Rejection under 35 U.S.C. 103(a) over Parrott et al. in view of Berdan, II, Clarke and Hinden et al. (U.S. 4,861,631):

Claims 28-30 and 42 depend ultimately from independent claim 22, and claims 37, 38 and 41 depend ultimately from claim 31 and, accordingly, these claims are submitted to be patentable for the same reasons as presented above in support of the independent claims 22 and 31. These claims are submitted to be further patentable for the following reasons.

CLAIMS 28-30 and 37-39

Claims 28 and 37 each specify that the flanges 4 include axially-extending portions extending in axial directions of the tubular duct, and that the noncombustible joint member 5 has opposing side edges that are folded-over the axially extending portions, respectively, of the flanges 4 of the adjacent turns of the elongated strip 1 (see Figs. 1 and 2). Claims 41 and 42 each specify that the elongated strip 1 has flanges 4 projecting from first and second sides thereof into an interior of the tubular duct, that the noncombustible joint member 5 is engaged with the flanges, and that the flanges 4 and the noncombustible joint member 5 are disposed in the interior of the tubular duct. In paragraph 13 on pages 11-14 of the July 18, 2003 Office Action, the Examiner applied a combination of Parrott, Berdan, Clarke and Hinden against claims 28-30, 37, 38, 41 and 42.

In particular, the Examiner stated that

> Hinden discloses "a flexible connecting material used in air ducting (col. 1, lines 6-12) having air-impervious sheets (items 17 and 18, Figure 5) encasing insulating material such as glass wall material (item 22, Figures 3-5), the insulating material is not labeled in Figure 5 (col. 2, line 49 - col. 3, line 8). The flexible connector material of Hinden et al. has marginal edges (item 19, the opposing side edges as claimed) that are clamped within recess (item 21) formed by the bent marginal edges (item 16 labeled in Figures 3 and 4) of the strips

(items 13 and 14, the flanges as claimed) (col. 3, lines 1-5 and Figures 3-5). The combination of the flexible connector material and the bent marginal edges (item 16, Figs. 3 and 4) corresponds to the noncombustible joint member as claimed in the instant application. The bent marginal edges of Hinden et al. are opposing side edges of the noncombustible joint member as claimed in the instant application that are folded over the strips of Hinden et al. (items 13 and 14), which correspond to the axially extending portions of the flanges as claimed in the instant application." *(Page 12, lines 4-15 of the July 18, 2003 Office Action).*

However, the Hinden et al. arrangement differs significantly from the claimed securing arrangement utilizing the noncombustible joint member, as claimed in claims 28 and 37. Although it is true that Hinden shows folded-over marginal edges 16 connected by a flexible joint member 17, 18, these elements are simply isolated features of the Hinden patent but are present in Hinden in a completely different arrangement than required by the present claims and would thus not in any way constitute a teaching to secure together adjacent turns of a spirally-wound elongated strip such as required in the present claims. That is, the bent marginal edges 16 of Hinden constitute a means of connection for connecting the two longitudinal end of a rectangular ductwork. There is no suggestion as to how or why these marginal edge-type connection portions 16 would be used to connect adjacent turns of a spiral-shaped elongated strip such as recited in the present claims.

CLAIMS 41 AND 42

Regarding claims 41 and 42 which specifically require the flanges 4 of the elongated strip 1, as well as the noncombustible joint member 5, to be disposed in the interior of the tubular duct, it is noted that this is not the case in Hinden et al. In particular, the Hinden reference discloses the elements being exposed at the exterior of the duct.

For these reasons, it is submitted that a person having ordinary skilled in the art would clearly not have been motivated by the Hinden et al. patent to modify the Parrott reference or a combination of Parrott, Berdan and Clarke or to make any combination of references record in such a manner as

to result in or otherwise render obvious the present invention of claims 28 and 37 or of claims 41 and 42, in view of Hinden et al. Therefore, it is respectfully submitted that claims 28-30, 37, 38, 41 and 42 are further patentable over the prior art for these reasons.

Ground of Rejection C - Rejection under 35 U.S.C. 103(a) over Parrot in view of Berdan, Clarke and Schroeder (U.S. 4,400,863):

CLAIMS 44, 45 and 47

Claims 44, 45 and 47 depend respectively from claims 31, 22 and 15 and, accordingly, are submitted to be patentable for the same reasons as set forth above in support of claims 31, 22 and 15, respectively.

Furthermore, claims 44, 45 and 47 recite that the noncombustible sheet 3 is formed of a material selected from the group consisting of an aluminum glass cloth, aluminum foil, a nonflamably treated resin film, a glass cloth the pores of which have been filled and coated with silicon, a fire proof processed nonwoven cloth, a nonflamably treated mixed woven cloth, and a mica sheet.

The Examiner cited the Schroeder patent for disclosing

> "a flexible section (item 16) of a duct that is a wrapped (i.e. wrapped in the form of a tube) aluminum foil sheet that is sufficiently stiff to preserve the tubular shape of the duct when bent (col. 2, lines 3-7 and 49-53). Since the aluminum foil is flexible, it is suitable for use as a sheet material that is to be spirally wound." *(Page 4, lines 18-20 of the December 29, 2003 Office Action).*

However, although Schroeder teaches an aluminum foil sheet for wrapping a duct, this is not what is claimed in present claims 44, 45 and 47. Rather, these claims are directed to the material of the noncombustible sheet 3 that forms an elongated strip 1 that is spirally wound so that the adjacent turns of the spiral shape are secured together to form a tubular duct. There is no disclosure or

teaching in Schroeder whatsoever that would have motivated a person of ordinary skill in the art to provide the aluminum foil material disclosed therein for encasing an insulating material in the manner require by the present claims so as to form an elongated strip that is spirally wound and the turns thereof secured together so as to form a tubular duct, as also required by the present claims. The fact that Schroeder discloses a flexible section 16 of a duct that is wrapped in the aluminum sheet provides no suggestion whatsoever that the aluminum foil material disclosed therein would or should be used as an encasing material for an insulating material to form an elongated strip that is to be spirally wound to form a tubular duct as required by the present claims.

For these reasons, it is respectfully submitted that a person having ordinary skill in the art would clearly not have been motivated by the Schroeder patent to modify the Parrott reference or a combination of Parrott, Berdan and Clarke or to make any combination of the references of record in such a manner as to result in or otherwise render obvious the present invention of claims 44, 45 and 47. Therefore, it is respectfully submitted that claims 44, 45 and 47 are further patentable for these reasons.

8. CLAIMS APPENDIX.

A copy of the claims on appeal is set forth in a Claims Appendix immediately following the conclusion and signature, and is incorporated herein by reference.

9. EVIDENCE APPENDIX

NONE

10. RELATED PROCEEDINGS APPENDIX

NONE

11. CONCLUSION:

This Appeal Brief is submitted with a fee of $170.00. This represents the difference between the previously paid Appeal Brief fee ($330.00, paid on June 1, 2004) and the Appeal Brief fee ($500.00) currently in effect.

Respectfully submitted,

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8. CLAIMS APPENDIX

15. A noncombustible insulating duct comprising:

an elongated strip formed of an insulating material and a noncombustible sheet, wherein said noncombustible sheet is disposed continuously about a circumference of said insulating material so as to completely encase said insulating material when viewed in longitudinal cross section;

wherein said elongated strip is arranged in a spiral shape having a plurality of turns;

wherein adjacent turns of said plurality of turns of said spiral shape are secured together by a bonding agent so as to form a tubular duct; and

wherein said tubular duct is noncombustible.

16. A noncombustible insulating duct according to claim 15, wherein said bonding agent comprises a noncombustible bonding agent.

17. A noncombustible insulating duct according to claim 16, wherein said insulating material comprises a noncombustible insulating fiber.

18. A noncombustible insulating duct according to claim 15, wherein said insulating material comprises a noncombustible insulating fiber.

19. A noncombustible insulating duct according to claim 18, wherein said noncombustible insulating fiber is glass wool.

20. A noncombustible insulating duct according to claim 18, wherein said noncombustible insulating fiber is rock wool.

21. A noncombustible insulating duct according to claim 15, wherein said elongated strip has a substantially rectangular cross section.

22. A noncombustible insulating duct comprising:

an elongated strip formed of an insulating material and a noncombustible sheet, wherein said noncombustible sheet is disposed continuously about a circumference of said insulating material so as to completely encase said insulating material when viewed in longitudinal cross section;

wherein said elongated strip is arranged in a spiral shape having a plurality of turns;

wherein adjacent turns of said plurality of turns of said spiral shape are secured together by a noncombustible joint member so as to form a tubular duct; and

wherein said tubular duct is noncombustible.

23. A noncombustible insulating duct according to claim 22, wherein said insulating material comprises a noncombustible insulating fiber.

24. A noncombustible insulating duct according to claim 23, wherein said noncombustible insulating fiber is glass wool.

25. A noncombustible insulating duct according to claim 23, wherein said noncombustible insulating fiber is rock wool.

26. A noncombustible insulating duct according to claim 22, wherein said elongated strip has a substantially rectangular cross section.

27. A noncombustible insulating duct according to claim 22, wherein

said elongated strip has first and second opposite sides facing in opposing axial directions of said tubular duct, respectively, and inner and outer sides facing toward an interior of said tubular duct and an exterior of said tubular duct, respectively;

said elongated strip has flanges projecting from said first and second sides thereof, respectively; and

said noncombustible joint member is secured to said flanges of adjacent turns of said elongated strip to connect said flanges together, thereby connecting said turns together.

28. A noncombustible insulating duct according to claim 27, wherein

said flanges include axially-extending portions extending in axial directions of said tubular duct; and

said noncombustible joint member has opposing side edges that are folded-over said axially extending portions, respectively, of said flanges of the adjacent turns of said elongated strip.

29. A noncombustible insulating duct according to claim 28, wherein

said elongated strip has a substantially rectangular cross section.

30. A noncombustible insulating duct according to claim 28, wherein

said flanges project into the interior of said tubular duct, and said noncombustible joint member is disposed in the interior of said tubular duct.

31. A noncombustible insulating duct comprising:

an elongated strip formed of an insulating material and a noncombustible sheet, wherein said noncombustible sheet is disposed continuously about a circumference of said insulating material so as to completely encase said insulating material when viewed in longitudinal cross section;

wherein said elongated strip is arranged in a spiral shape having a plurality of turns;

wherein adjacent turns of said plurality of turns of said spiral shape are secured together by both a bonding agent and a noncombustible joint member so as to form a tubular duct; and

wherein said tubular duct is noncombustible.

32. A noncombustible insulating duct according to claim 31, wherein said insulating material comprises a noncombustible insulating fiber.

33. A noncombustible insulating duct according to claim 32, wherein said noncombustible insulating fiber is glass wool.

34. A noncombustible insulating duct according to claim 32, wherein said noncombustible insulating fiber is rock wool.

35. A noncombustible insulating duct according to claim 31, wherein said elongated strip has a substantially rectangular cross section.

36. A noncombustible insulating duct according to claim 31, wherein

said elongated strip has first and second opposite sides facing in opposing axial directions of said tubular duct, respectively, and inner and outer sides facing toward an interior of said tubular duct and an exterior of said tubular duct, respectively;

said elongated strip has flanges projecting from said first and second sides thereof, respectively; and

said noncombustible joint member is secured to said flanges of adjacent turns of said elongated strip to connect said flanges together, thereby connecting said turns together.

37. A noncombustible insulating duct according to claim 36, wherein

said flanges include axially-extending portions extending in axial directions of said tubular duct; and

said noncombustible joint member has opposing side edges that are folded-over said axially extending portions, respectively, of said flanges of the adjacent turns of said elongated strip.

38. A noncombustible insulating duct according to claim 37, wherein

said elongated strip has a substantially rectangular cross section.

39. A noncombustible insulating duct according to claim 37, wherein

said bonding agent comprises a noncombustible bonding agent.

40. A noncombustible insulating duct according to claim 31, wherein

said bonding agent comprises a noncombustible bonding agent.

41. A noncombustible insulating duct according to claim 31, wherein

said elongated strip has flanges projecting from first and second sides thereof into an interior of said tubular duct, said noncombustible joint member is engaged with said flanges, and said flanges and said noncombustible joint member are disposed in the interior of said tubular duct.

42. A noncombustible insulating duct according to claim 22, wherein

said elongated strip has flanges projecting from first and second sides thereof into an interior of said tubular duct, said noncombustible joint member is engaged with said flanges, and said flanges and said noncombustible joint member are disposed in the interior of said tubular duct.

44. A noncombustible insulating duct according to claim 31, wherein

said noncombustible sheet is formed of a material selected from the group consisting of an aluminum glass cloth, aluminum foil, a nonflamably treated resin film, a glass cloth the pores of which have been filled and coated with silicon, a fire proof processed nonwoven cloth, a nonflamably treated mixed woven cloth, and a mica sheet.

45. A noncombustible insulating duct according to claim 22, wherein

said noncombustible sheet is formed of a material selected from the group consisting of an aluminum glass cloth, aluminum foil, a nonflamably treated resin film, a glass cloth the pores of which have been filled and coated with silicon, a fire proof processed nonwoven cloth, a nonflamably treated mixed woven cloth, and a mica sheet.

47. A noncombustible insulating duct according to claim 15, wherein

said noncombustible sheet is formed of a material selected from the group consisting of an aluminum glass cloth, aluminum foil, a nonflamably treated resin film, a glass cloth the pores of which have been filled and coated with silicon, a fire proof processed nonwoven cloth, a nonflamably treated mixed woven cloth, and a mica sheet.

9. EVIDENCE APPENDIX

None

10. RELATED PROCEEDINGS APPENDIX

None